

Bell Work
24-April-17

**Please compute the “ $-\log(7)$ ”
using your calculator?**

What are acids and bases?

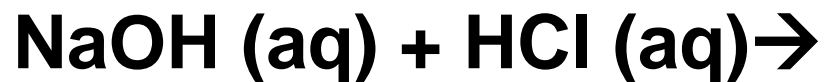
EQ: What bases have you used today and how did they help you?

Agenda:
introduction to Acid Base Chemistry

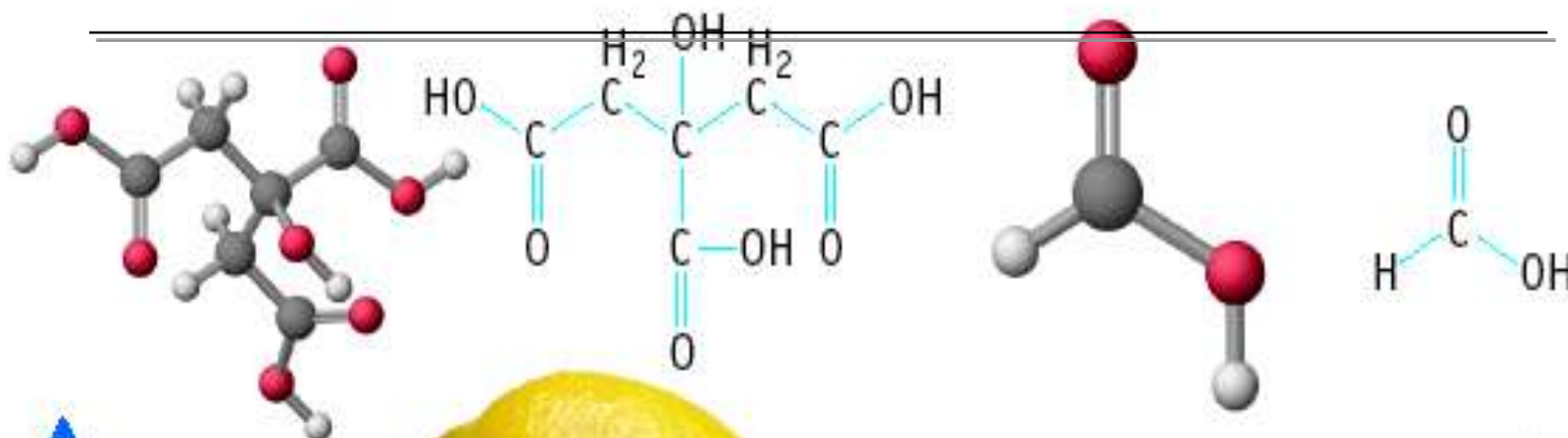
Objective:

Following the lesson you will be able to name simple acids and bases, know a general definition of an acid, and know how acids and bases taste

Visual Introduction to Acid Base Chemistry



Acid and Bases



▲ The tartness of lemons and oranges comes from the weak acid citric acid. The acid is found widely in nature and in many consumer products.
(Charles D. Winters)



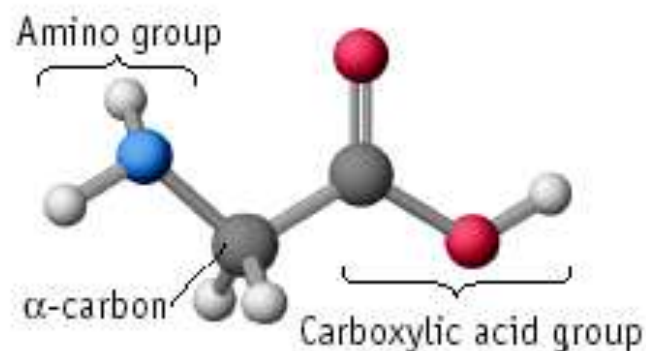
▲ The sting of ants is due to the weak acid formic acid, HCO_2H .
(Gallo Images/@ CORBIS)



Acid and Bases



▲ Aspirin is a weak acid that has been used as an analgesic for over 100 years.
(Charles D. Winters)

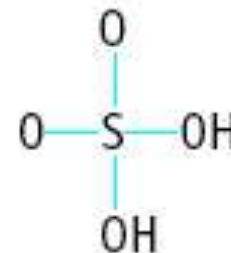


▲ Glycine is representative of the amino acids that are the basis of proteins. The $-\text{CO}_2\text{H}$ group is the acid portion of the molecule, and the $-\text{NH}_2$ group is the basic portion. (Charles D. Winters)

Acid and Bases



▲ Caffeine is a well known stimulant and a weak base. (Charles D. Winters)



▲ A sea slug excretes the strong acid sulfuric acid in self-defense. (Sharksong/ M. Kazmers/Dembinski Photo Associates)



Acids

Multiple definitions:

Lewis

Arrhenius

Bronsted Lowry

Generally it's a chemical compound that produces a hydrogen ion concentration higher than pure water:
 $[H^+]$ or $[H_3O^+]$



Acids



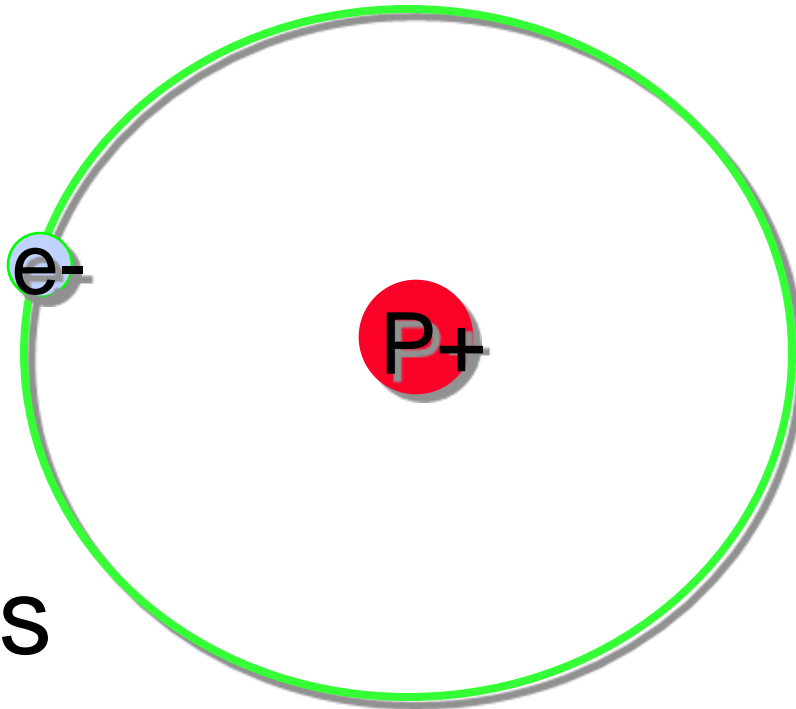
React with carbonates and bicarbonates to produce carbon dioxide gas

Have a sour taste. Vinegar is a solution of acetic acid. Citrus fruits contain citric acid.

Some Properties of Acids

Produce H^+ (as H_3O^+ ions in water):

Call a “proton”



Taste sour

Corrode metals

Acid Nomenclature Review

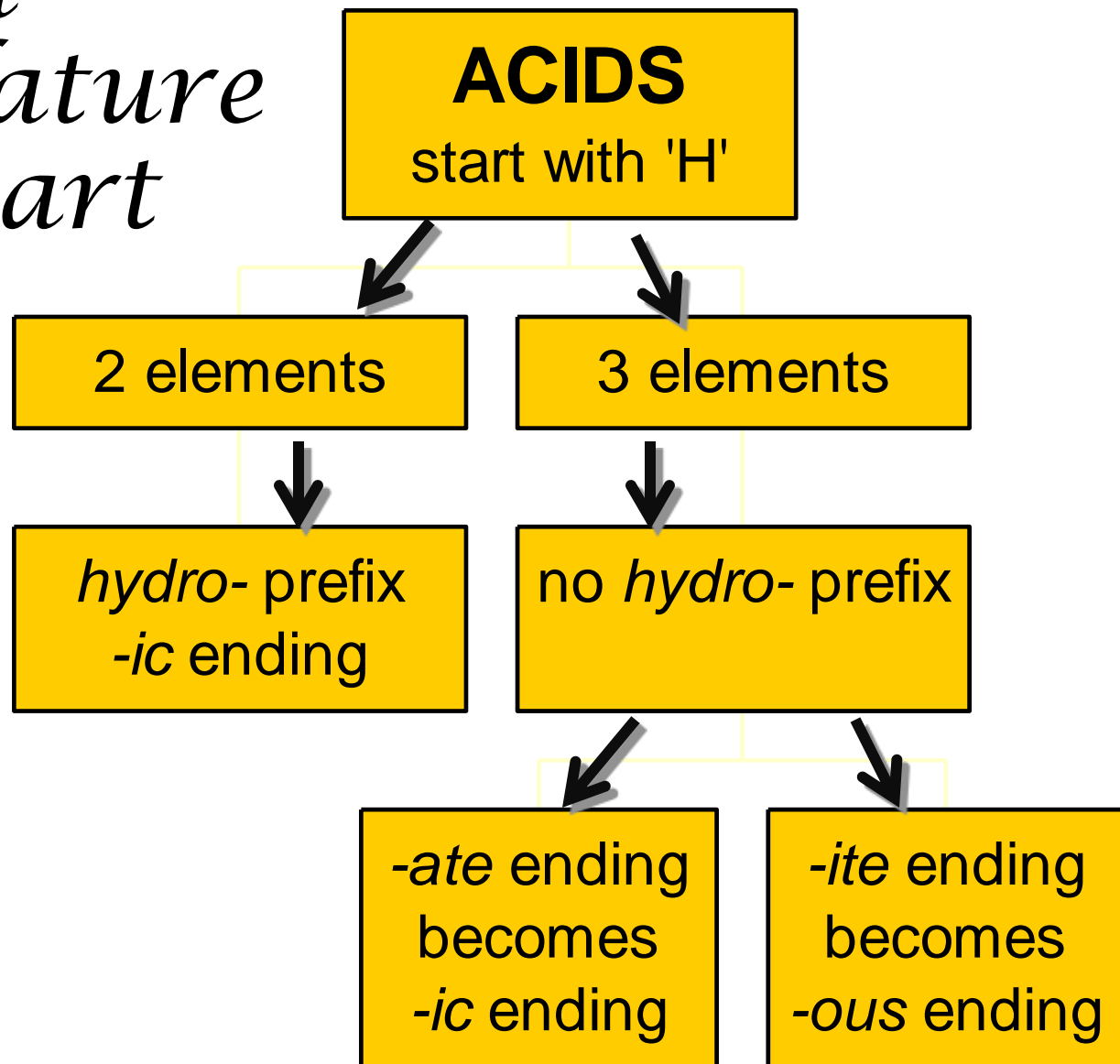
Anion Ending		Acid Name
Binary	→ -ide	hydro-(stem)-ic acid
	-ate	(stem)-ic acid
Ternary	→ -ite	(stem)-ous acid

Acid Nomenclature Review

*An easy way to remember which goes
with which...*

*“In the cafeteria, you ATE something
ICky”*

Acid Nomenclature Flowchart



Acid Nomenclature Review

$\text{HBr}_{(\text{aq})} \Rightarrow$ hydrobromic acid

$\text{H}_2\text{CO}_3 \Rightarrow$ carbonic acid

$\text{H}_2\text{SO}_3 \Rightarrow$ sulfurous acid

Strong Acids

Completely dissociates in water.

You will need to remember these three:



Name 'Em!

HF

HCl

H₂SO₄

HNO₃

HIO₃

Which are
strong acids?



Bases

A chemical species that donates hydroxide ions (OH^-) or that accepts protons.

Have a bitter taste.

Feel slippery. Many soaps contain bases.

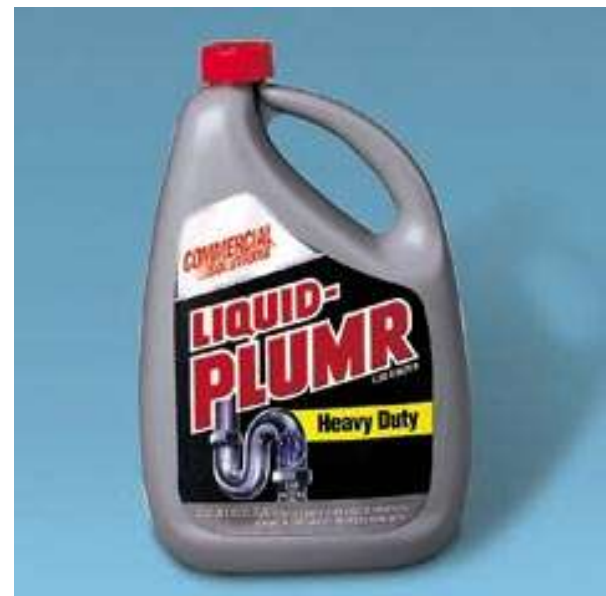
Some Properties of Bases

Produce OH^- ions in water

Taste bitter, chalky

Are electrolytes

Feel soapy, slippery



Name these Common Bases

NaOH

Drain cleaner

KOH

Liquid soap

Ba(OH)₂

Stabilizer for plastics

Mg(OH)₂

Milk of magnesia

Al(OH)₃

Maalox (antacid)

Naming Bases

Group I metals all form strong bases with hydroxide

Same name as chemical name

Ex. NaOH – Sodium hydroxide

List the rest of them (write their names and chemical formulas)

KNOW THEM

Recall...

In your own words define:

What an acid and base are,

How can you distinguish
them,

How do you name them